Innovation: The Key Process for Business Growth

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After years of cost-cutting and downsizing, business leaders are once again looking for ways to generate growth. While innovation should be a primary engine for this growth, many senior managers are wary of investing in a process that entails such high costs and offers so little certainty of return. They also doubt their companies' ability to change course abruptly from retrenchment to full-steam-ahead investment. And even where senior management is willing to forge ahead with innovation programs, members of R&D, Marketing, and Manufacturing departments – which have been so long confined to incremental improvements designed to produce low-risk, short-term returns – now need help relearning innovation processes, skills, and mindsets. In short, companies seeking breakthrough products that will change the rules of competition and generate real wealth are facing a number of hurdles.

This article outlines some of the thinking expressed at a recent gathering of Chief Technology Officers (CTOs). Arthur D. Little invited the CTOs to explore some of their challenges over dinner at our European Innovation Centre in Cambridge, U.K., in October 1996. The discussion covered a wide range of issues, from whether „stale" companies should just be allowed to die and make way for new ones, to the role of governments in encouraging innovation. We looked at what motivates companies and individuals to continue looking for new things to do. We considered the delicate role of management in creating and sustaining an innovation imperative – while not interfering too closely in day-to-day processes. And we explored how innovation can become the key process for business growth.

Our discussion focused on three key challenges:

• Making innovation a plannable, repeatable process

• Supporting innovation through a strategic approach to technology management

• Changing staff mindsets about R&D

To help focus the discussion, senior Arthur D. Little staff members shared their thinking on each of these topics, generating discussion by the whole group.

Innovation as a Plannable, Repeatable Process

Jean-Philippe Deschamps, a Vice President of Arthur D. Little who also teaches at IMD in Lausanne, opened the session with the observation that four concepts traditionally associated with innovation – *creativity, entrepreneurship, champions,* and *„can do" climate* (Exhibit 1) – have failed to convince CEOs to invest in innovation. He argued that, although these factors are all good things, they are all rather vague and „cultural." In the eyes of CEOs, who need more certainty in their investment choices, such concepts have serious shortcomings:

• Creativity, exercised in isolation, can lead to warehouses full of unexploited ideas.

• Entrepreneurship can lead to fragmented efforts.

• Champions can become „prima donnas" who are impossible to manage.

• A „can-do" climate can lead to barely controlled chaos.

Exhibit 1

Innovation Management: Traditional
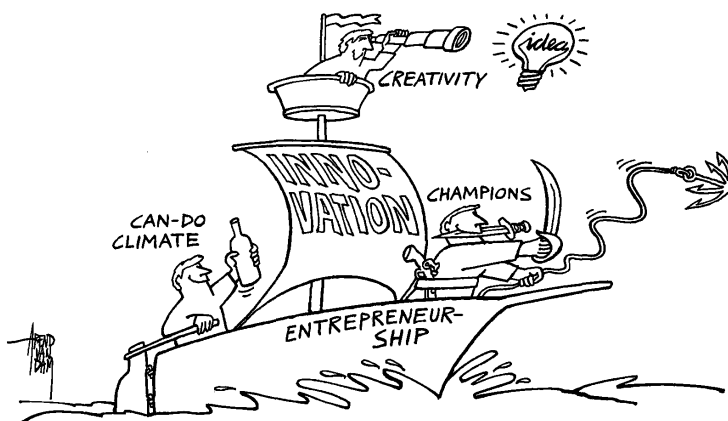
In this traditional view, management's job is to seek out, among all the creative ideas lurking in the organization, the ones that seem all right and screen them for fit with the business. It is very much a „bottom-up" process, with little management direction or control. Because it is so random and unmanageable, it does not make good investment sense.

Many CEOs think back, misty-eyed, to earlier times in the history of their companies. In those days, a few entrepreneurs operating from garden sheds achieved great things in a short time. Now their companies are large and bureaucratic. They are filled with rules designed to stifle innovation. Some underground innovation still occurs, and occasionally succeeds, but mostly it's killed off before it has a chance to blossom. As for entrepreneurship, many companies that tried empowering their people saw their costs go out of control, so the CEOs soon stopped all that.

For CEOs, who typically want 90 percent probability of success on their investments, new product failure rates are simply unacceptably high. Nonetheless, companies are realizing that downsizing, cost-cutting, reengineering, and restructuring – all necessary over recent recessionary years – cannot create sustainable growth. As they turn once again to innovation, a new innovation ethic is emerging. While it is still in early development, its proponents are shaping it around four key concepts borrowed from current thinking on strategy: *vision, road-mapping, process, and competencies.*

• *Vision,* for so long a dirty word among technologists, is now helping some companies to envisage and shape the futures they want – not only in terms of overall strategy, but specifically in terms of new, innovative products, technologies, and services.

• *Road-mapping* is helping companies set a course for growth by creating an integrated map of required technologies, competencies, products, and market positioning (Exhibit 2). Road-maps can make the creation of breakthrough products plannable and achievable.

• *Process* denotes a holistic approach to an entire chain of activities, from translating market intelligence and insights into customers' future needs (sometimes called the „fuzzy front end") to creating product and technology vision and forming a strategy for producing and marketing those products and technologies.

Exhibit 2

Innovation Management: Contemporary
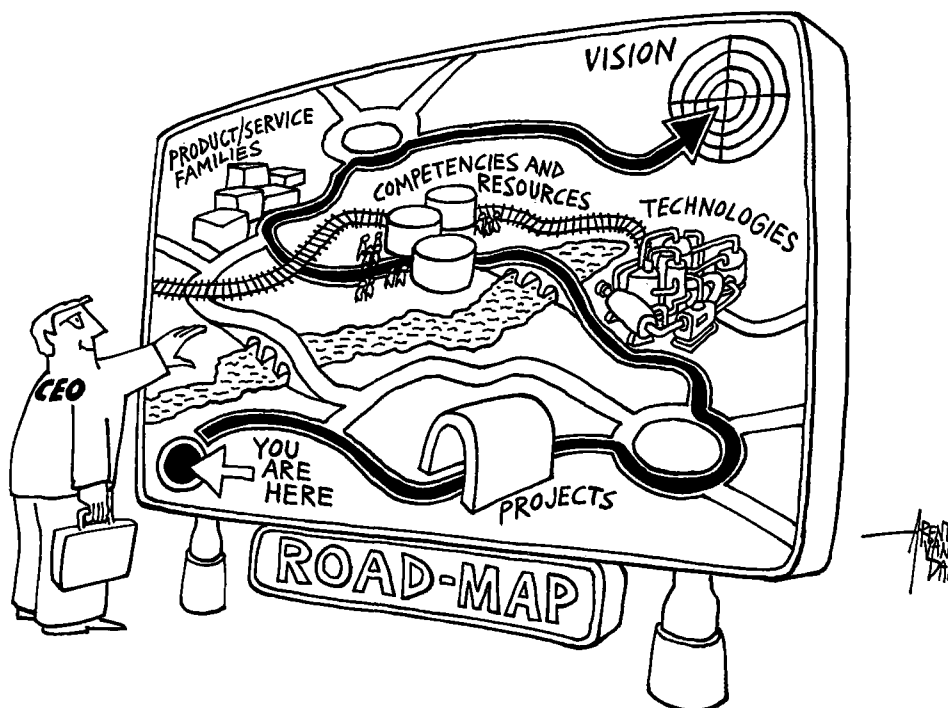
• *Competencies* play a vital role in the new innovation ethic, especially in four areas:

 – Discovering potential customers' unarticulated needs by using visioning and scenario-thinking, rather than market research

– Systematically screening for and managing the really valuable ideas

– Using venturing to take ideas to market rapidly and leanly, testing new concepts very quickly and inexpensively

– Learning to identify the mechanisms that will make the whole process repeatable and therefore continuously improvable

The benefits of this new ethic are clear. As the innovation process is more clearly defined, and companies become adept at managing it, it will be possible to deliver breakthrough products to order (Exhibit 3). The process will incorporate both top-down input (desirable markets, societal needs the company is trying to meet, the company's goals for return on investment and market position) and bottom-up creativity and implementation. Innovation will have become a key core competence.

Exhibit 3

Innovation Can Target and Deliver Breakthroughs
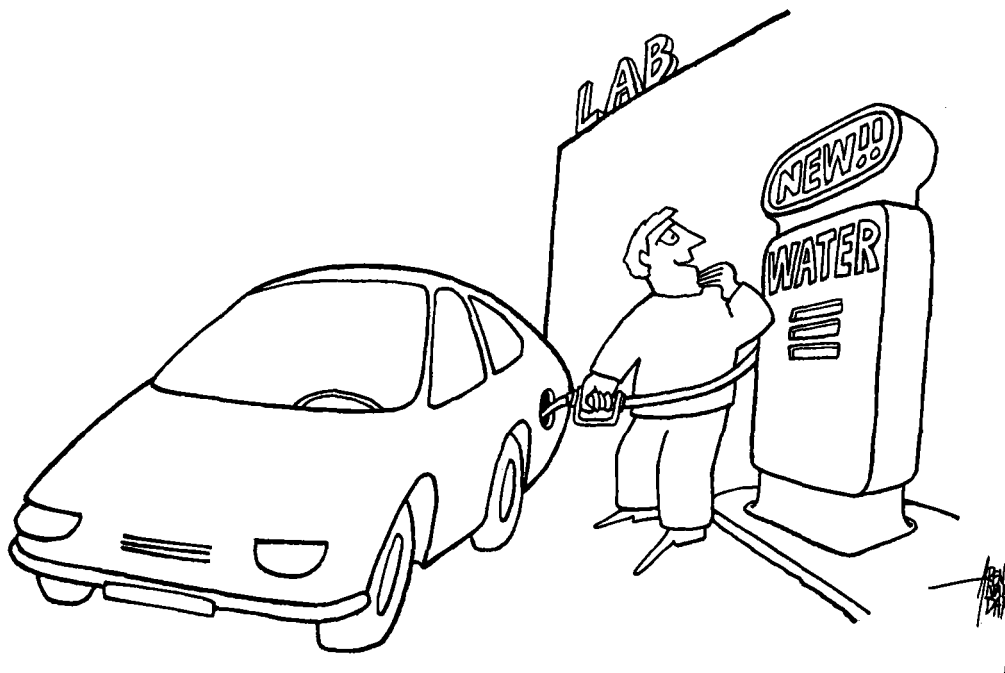
While there is still much to do, some businesses are already moving in this direction. For others, it is time to change company mindsets about innovation and recognize that it can become a core business process and a sustainable route to growth (Exhibit 4).

Strategic Management of Technology

Chris Floyd outlined why competitive strategy and business process reengineering, while important, are not enough to succeed in today's climate. These approaches tend to be short-term in effect and do little, if anything, to sustain a company's long-term competitiveness.

Competitive strategy helps companies to understand where they are relative to their competitors. Unfortunately, such strategy tends to be both inflexible and transparent to competitors. Smart, agile competitors find it too easy to read each other's strategy and anticipate what each other will do, seriously undermining the value of the strategy.

Business Process Reengineering has raised die efficiency of cross-functional processes in companies. However, BPR can lead to a soulless culture with little scope for innovation. Its pervasiveness has prompted a renewed focus on leadership, in an attempt to restore some spark of vitality to these efficient, yet idea-sterile, organizations.

Every company needs some vision of where it's going and a plan for getting there. A technology strategy forces a company into longer-term thinking about achieving that vision.

Exhibit 4

Innovation Management: Contemporary
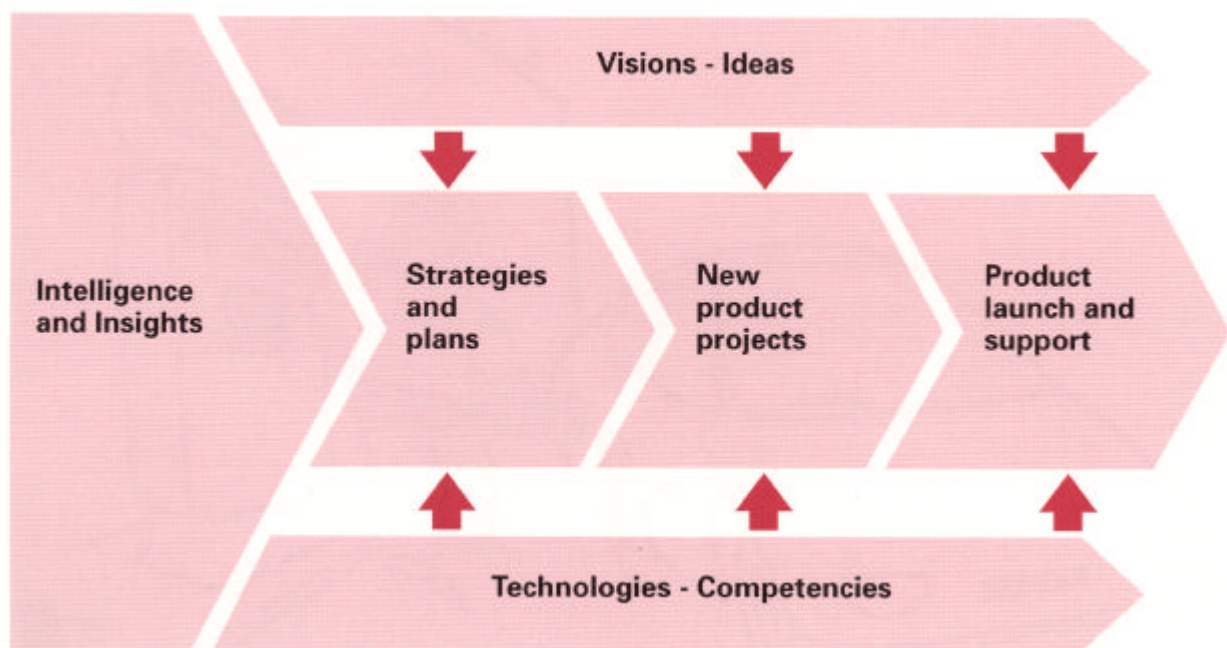
Technology cannot be turned on and off like a tap. Investment must be continuous and aligned with long-term objectives. A long-term technology strategy makes outsourcing and licensing choices explicit. This allows the effective CTO or Director of R&D to manage not just internal R&D activity, but all the ways the company exploits technology, whatever its source or destination. Relationship-building with other organizations and individuals becomes extremely important. A good technology strategy will ensure that the company always has a sufficient stream of owned technology, core skills, and competencies to maintain its desired competitive position.

Business leaders must understand that R&D cost-cutting can be very short-sighted. Often, it does not even make financial sense. In one recent example, we analyzed a company's R&D investments. By cutting out unnecessary investments, we identified a potential £3 million saving. However, by enhancing the efficiency of R&D and speeding up the R&D processes to reduce time to market, we increased the saving to £10 million. Subsequently, we identified a benefit worth a staggering £13 million by making better strategic choices early in the cycle. The key is to spend R&D money where it has the highest business impact.

A technology strategy should include both incremental and step-change activities. The incremental part is a rolling incremental review of what to invest in; it allows the company to manage the business day by day. The step-change part leads to contingency plans against the major technology changes that could allow a competitor to undermine the basis of your business.

To develop the strategy, the company needs a vision of the future – possibly 15 years from today (Exhibit 5). The complete vision is an outline of what a company thinks may happen and where it wants to be. It includes geographical areas, product sectors, and market segments. It covers how the company expects to compete on products or services. It also covers the basis of competition – a combination of design/make/ own/operate and how to differentiate its products from the competition – by price, function, or service.

This vision enables a company to develop a road-map of likely product and service developments and the technologies necessary to support them. In this sense, „technology" refers to an „application of know-how" – as in „we know how to do X."

The next stage involves creating technology „trees" that link several hundred necessary technologies, clustered into 20 to 30 groups of related technologies for ease of management. Each of the technology clusters is rated according to its state of evolution – mature, key, pacing, or emerging; then the company's own competence in these key technologies is rated – dominant, strong, favorable, tenable, weak (Exhibit 6).
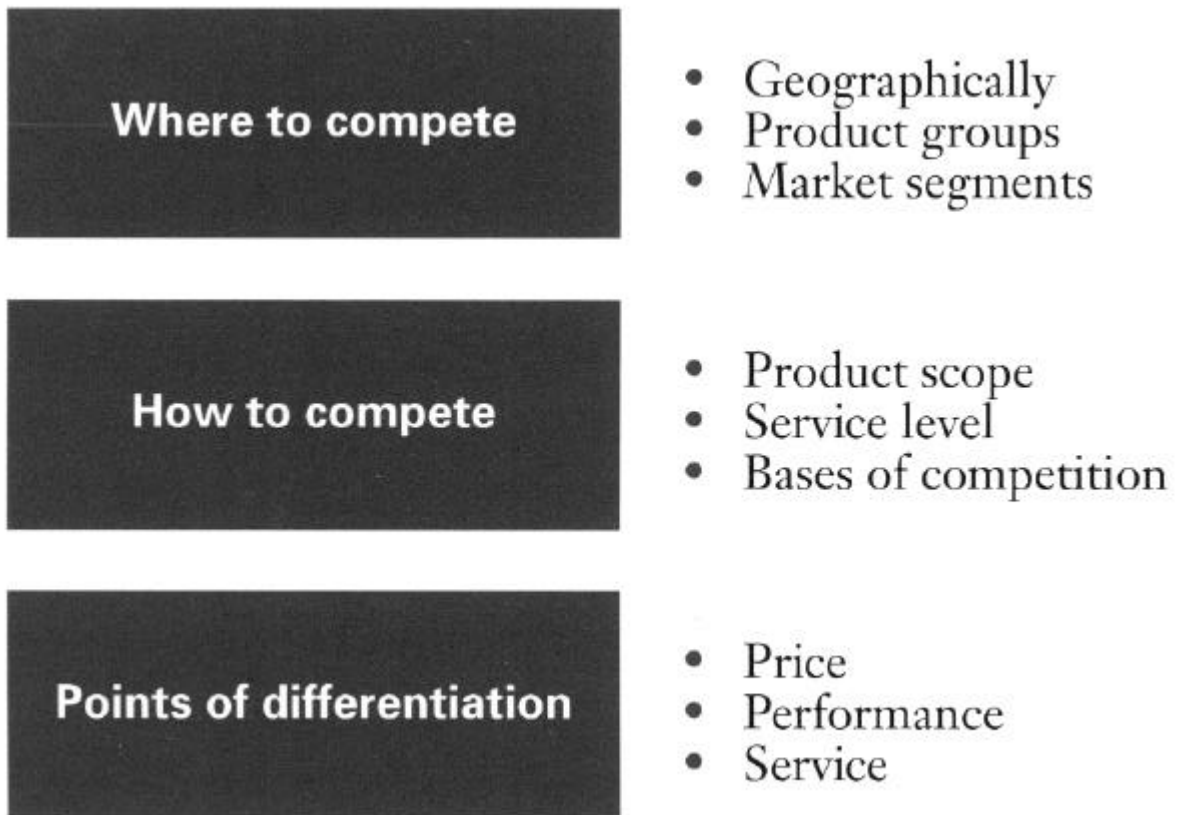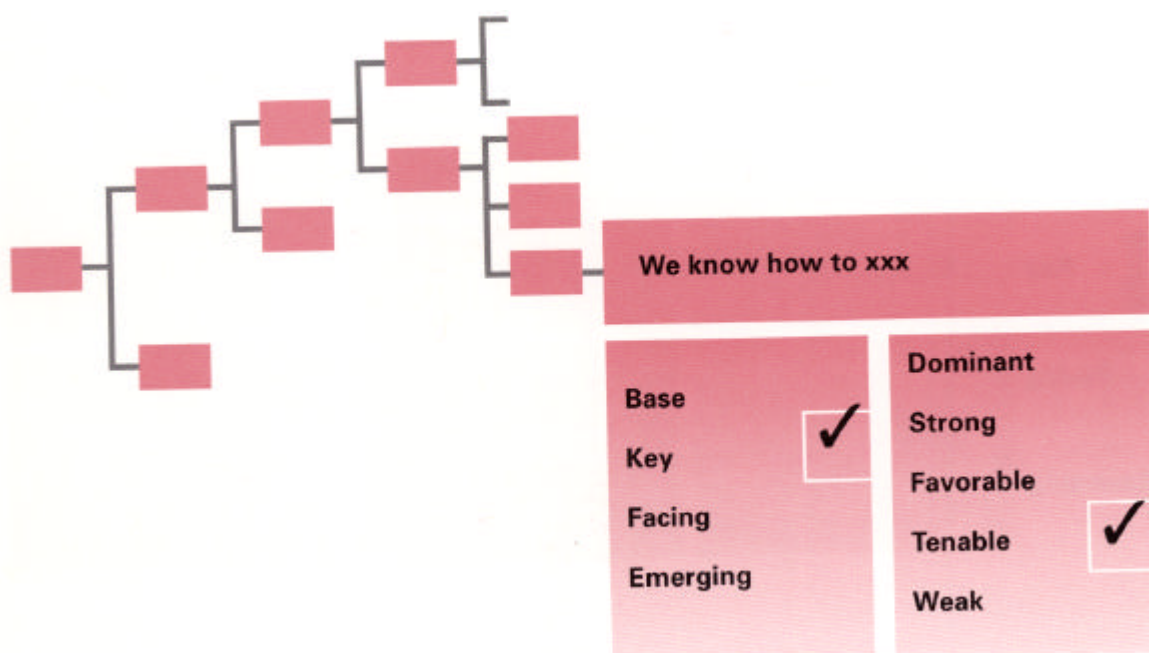
Exhibit 5

Agree on a Vision for the Future

Where to compete	• Geographically • Product groups • Market segments
How to compete	• Product scope • Service level • Bases of competition
Points of differentiation	• Price • Performance • Service

Exhibit 6

Identify Current and Future Technologies

We know how to xxx

Base	✓	Dominant	
Key		Strong	
Facing		Favorable	
Emerging		Tenable	✓
		Weak	

Now the organization can make strategic choices about what to invest in, how, and why (Exhibit 7). Decisions follow on what to build in-house, what to develop collaboratively, and what to walk away from. In general, it's much better to back a few winners with enough resources to achieve real impact than to spread resources too thinly so the impact is both low and late.

As with product breakthroughs, technology breakthroughs can also be planned – and technology discontinuities can be managed. It's often possible to spot areas where things will happen, especially the potential substitutes for today's key technologies. Look at those technologies that are running out of steam (no longer differentiating) (Exhibit 8). They often show flattening cost-reduction „learning" curves or are approaching physical limits when the market need for products based on these technologies is still strong. Technologies with such characteristics are vulnerable to leaner or faster competitors.

Exhibit 7

Identify Strategic Implications

To find the potential substitute, go back to the incremental strategy, look for emerging technologies, and supplement internal thinking with some fresh brain-storming with outsiders. Remember that your competitor has probably already spotted the weakness. Companies must learn to think like their fiercest competitors and do what they would do! Also, look at how similar problems are being solved in other industries. Which technologies are they using? Could they be transferred or adapted?

When a technology threat emerges, companies have several options:

• *Walk away.* There are times when the technology shift is so great that this is the only possible course. Companies should learn to recognize such threats and accept the inevitable pain.

• *Defend a strong position.* There may be time to reinvigorate. Alternatively, it may be possible to buy and bury the competitor; but this tends to work only for a short time, as the technology threat often reemerges later.

• *Build a position.* Sometimes you can develop, license, or buy new technologies. But be careful of the internal consequences of bringing radically new technologies into factories and organizations designed and trained for other ways of working.

Companies facing significant technology threats must keep their nerve. Run the business as usual, but look forward and outward at other industries, potential partners, joint ventures, and academia. Place side bets on long-shot technologies that just might work out and become big threats. Think corporately to design a long-term technology strategy that will create the innovative capacity for growth.

Changing Staff Mindsets About R&D

Geoffrey Marlow argued that people's *mindsets* are perhaps the most pervasive inhibitor of effective cooperation in organizations. Staff members with excellent skills in one functional area are frequently unable to appreciate – or, in extremes, even tolerate – different views on how to move forward on an issue. Without changing such mindsets, the organization will fail to harness much of its collective knowledge and intellectual energy.

Exhibit 8

Looking for Breakthrough Threats

| Loss of Competitive Advantage | Asymptotic Performance | Natural Limits |
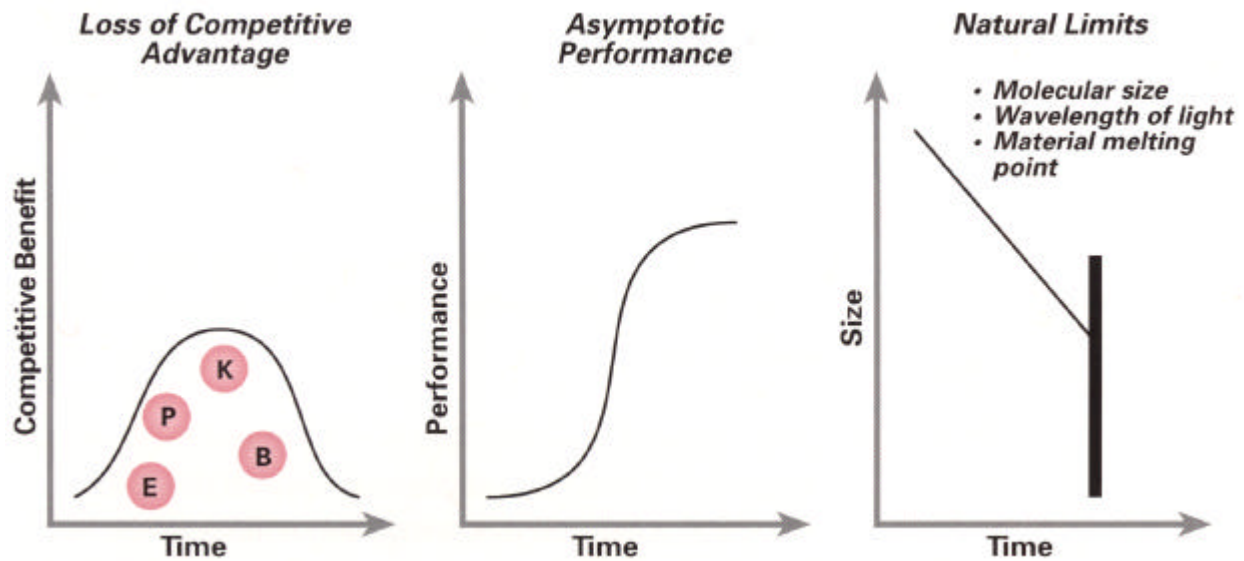
Once formed, mindsets become more and more deeply ingrained through a reinforcing loop (Exhibit 9). Mindsets condition our *perceptions,* which dictate what we *experience.* Our experiences reinforce our original mindsets and close the loop. In organizations, this phenomenon tends to manifest as separate „mindset factions" e.g., in R&D**,** Marketing, and Manufacturing.

Members of various factions see things differently, yet all believe they are unarguably and self-evidently „right" and therefore that their colleagues are clearly incompetent, ill-intentioned, or both.

Managers (and consultants!) approaching such situations must do so with the attitude that no one person or faction is „right" or „wrong," rather, all perceptions are valid to those who hold them (Exhibit 10). This attitude alone will go a long way toward defusing conflict and promoting mutual understanding. Somehow, all parties must unlearn some of their „programming" and relearn a shared mindset through joint re-exploration of current reality.

A critical innovation program is an ideal vehicle for mindset change. To be successful, however, the program must meet several preconditions. It must be focused on and around a critical and pressing business issue (if the issue is not important, people will not care enough to challenge their existing mindsets). It must be led by an experienced and successful manager who is keen to pioneer „the new way" (thereby promoting the widespread view: „If that person is leading it, it's bound to be successful.") The issue must cut across all key functional roles; it must be bounded and of manageable size (a fixed time constraint – for example, a launch date – helps maintain momentum and removes „slack" in which backsliding can occur). And the program must employ tools and techniques that support the learning processes. One caution: top management support must be visible but balanced with other priorities; otherwise, people may claim that the program's success caused chaos elsewhere.

Finally, in our roles as change agents we must:

• Learn how to facilitate learning processes, so we can support ourselves and others as we overcome many years' programming

• Change our own mindsets – which are frequently the biggest barriers to the acceptance of new ways of looking at things in our organizations

• Set the example, walk the talk, and practice what we preach
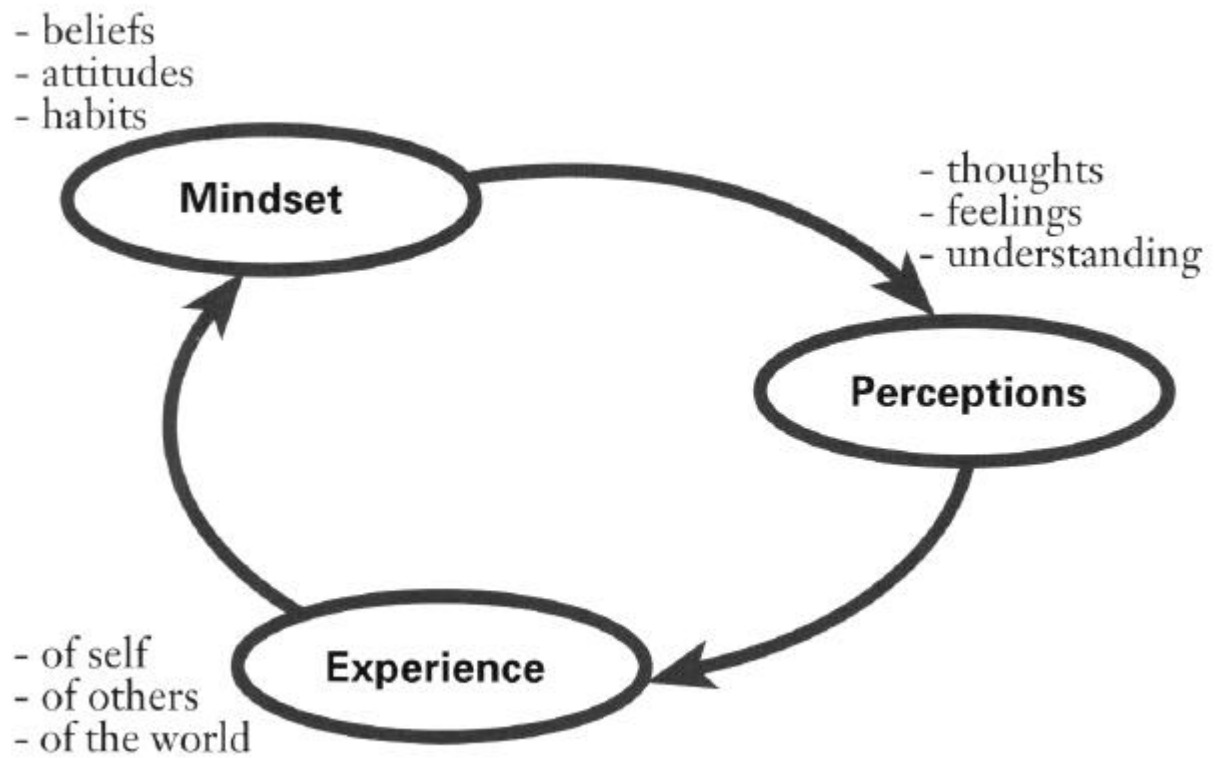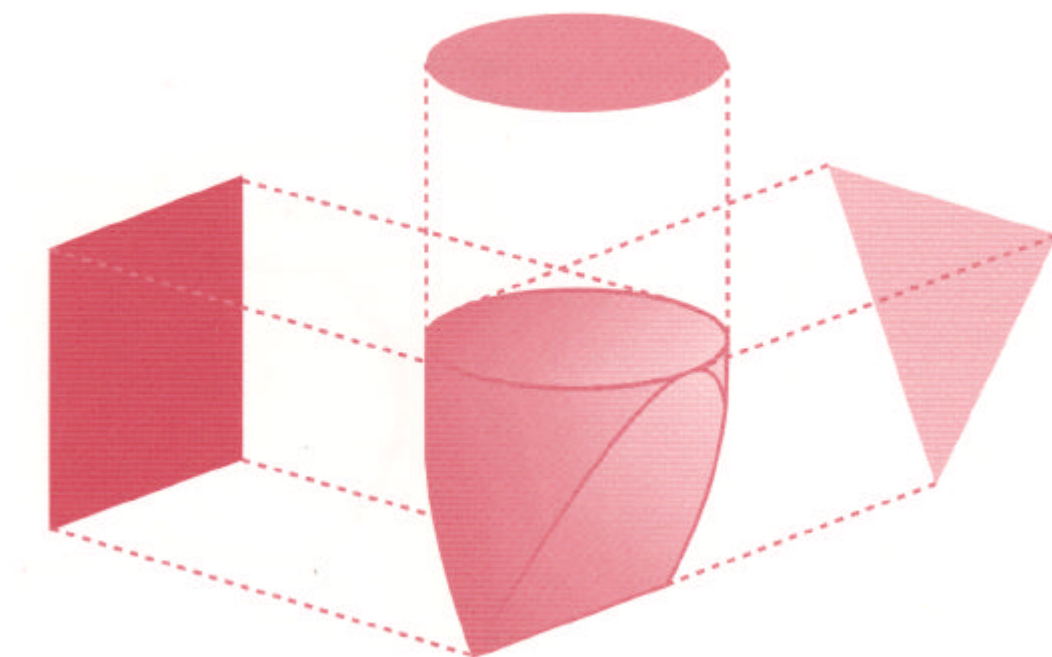
Exhibit 9

A Reinforcing Loop

- beliefs
- attitudes
- habits

Mindset

- thoughts
- feelings
- understanding

Perceptions

- of self
- of others
- of the world

Experience

Exhibit 10

All Perceptions Are Valid...

When You See Others' Viewpoints

The Discussion

Our discussion started with the issue of rapid change expected of managers today. They must keep costs under control yet must rapidly raise their organizations' innovative capacity. Are we expecting too much of those managers? They have been used to downsizing and cost-cutting for so long. Now we want them to be innovative and entrepreneurial. Are they up to it? Can they do this and also continue running their businesses?

We concluded that in today's competitive climate there really is no choice. Companies must switch gears from focusing on cost to focusing on growth by encouraging people to take risks. It's going to be a major challenge.

We speculated on the ways in which good Human Resources staff members can help with mindset change. Unlike hard-nosed business managers, they seem to understand these issues intuitively and can play a big part in helping create the right environment to accelerate the change.

Also in the discussion, we questioned our explicit assumption that companies should be saved from these problems. Should we allow some companies to just die, rather than assume they can be regenerated by reinstalling an innovation climate? We explored the way in which most companies diversify as they grow. We could see that companies that have been around for some time are used to some parts fading out as rising stars emerge to replace or outshine them.

We then revisited whether or not it is practicable to try a major mindset change on a critical project. We felt it could be the only way to succeed. We remembered how many start-up companies are totally single-minded in their focus on a particular target. It is often those that were obsessed by their vision that have succeeded spectacularly. Later, as the companies have become less innovative, they've bet less of their resources on critical projects.

A key aspect of mindset change is the choice of whom to change first. If the „change leaders" adopt the change without becoming sanctimonious – if they continue to respect and tolerate views significantly different from their own – it becomes easier for others in the community to follow.

We looked at the impact management can have when it focuses attention on an initiative. Balance is key. *Too* little, and the initiative will be ignored before it has a chance; too much, and other projects suffer as a consequence.

Restoring an innovation ethic in a company requires attention to reward and recognition. We must motivate people to innovate. Managers should play a big part in this. They must „walk the talk": stressing the importance of the change; continually celebrating the successes, however small; and encouraging and learning from failures, however large.

Governments have a role, too. It's no good just to keep saying we must innovate more to succeed. We need an agreed-upon measure of a company's „innovation performance," and governments should require it to be published alongside the balance sheet. In this way, investors would be better informed as to how well companies are developing and exploiting their knowledge.

We concluded that the triple challenge seen by the Best of the Best CTOs – seamless innovation, from concept to customer; strategic management of technology, from theory to process; and mindsets in and about R&D – continue to be the big challenges companies face as they bounce back from the cost-cutting era. We agreed that companies are making progress in rising to the challenge.

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